The Excavating Engineer

Vol. XVI No. 1 JANUARY, 1922

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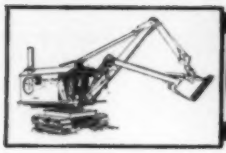
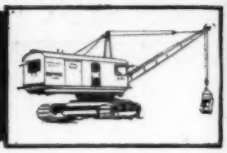
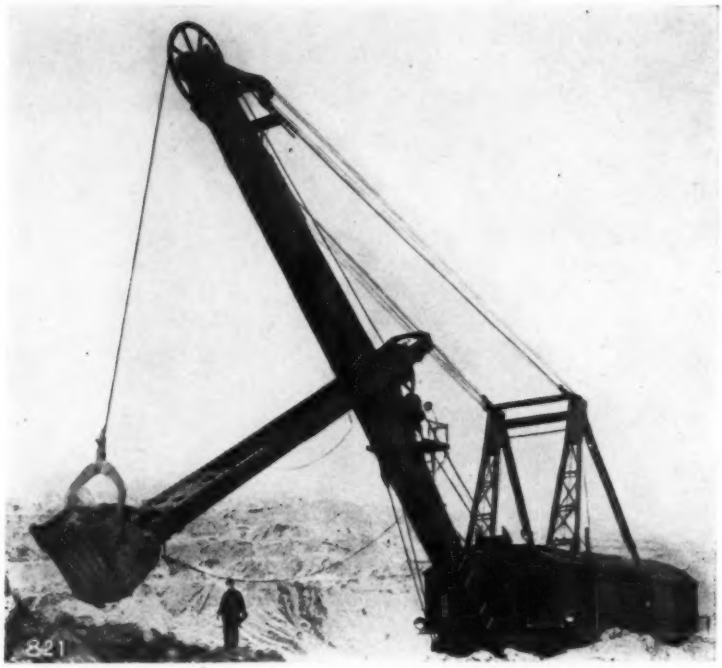


BUCYRUS





225-B Bucyrus electric shovel and dragline owned by M. A. Hanna & Co., stripping iron ore at Nashwauk, Minnesota. This machine is now operated as an electric dragline equipped with a 155-foot boom and 5-yard bucket.

TWELVE TO ONE

WHERE ten to twelve cuts are required with a railroad-type shovel, the Bucyrus large revolving shovel takes one. Figure the saving in track shifting, grade reduction and decreased wear and tear on equipment.

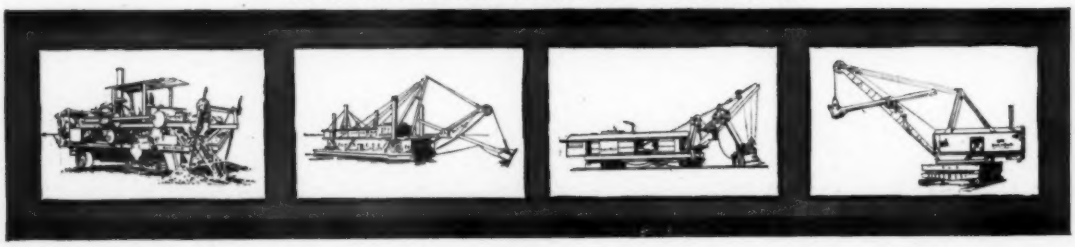
The exceptionally high lift and wide reach of these Bucyrus shovels has made it possible to mine economically deposits of coal, iron ore, fire clay, etc., which could not have been handled by any other method.

Rugged, simple construction throughout insures satisfactory outputs with the lowest possible maintenance costs. You will be interested in Bulletin DS, giving complete information on large revolving shovel operation.

BUCYRUS COMPANY

South Milwaukee, Wis.

Write Nearest Branch Office for Information. See List on Last Page.



The Excavating Engineer

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Vol. 16 MILWAUKEE, JANUARY 1922 No. 1

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ADDRESS ALL COMMUNICATIONS TO

THE EXCAVATING ENGINEER PUBLISHING COMPANY

BRADLEE VAN BRUNT, Manager and Editor

SOUTH MILWAUKEE WISCONSIN, U. S. A.

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Western 4-Yard Cars on the "Dump," Pittsburgh Tunnel Work

Here Are Some Real Dump Cars

Western

that's why

It takes a real dump car to handle rock like that, day in and day out. Note the size of the material. It all was dumped from Western 4-yard dump cars. The Western Heavy Duty 4-yard dump car was built to handle rock, and ***stand up***. Contractors and quarrymen say that there never was a "real dump car" until the 4-yard Western was put upon the market.

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Where industrial plants use steam shovels and dump cars the tendency is toward the 6-yard Westerns, standard gauge, BUT whatever your haulage problem, there is a Western dump car to meet it.

Built in all practical sizes from 1 cubic yard to 45 cubic yards capacity.

Let our engineers help determine your most economical installation and layout.

WRITE TODAY

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Earth and Stone Handling Equipment

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LIMA LOCOMOTIVES

What do You know about the Shay?

If you had known of the special fitness of the Shay Geared Locomotive for pit, quarry and excavating work, and its many money-saving advantages, it is more than likely you would be using nothing but Shays now.

It isn't too late to investigate. We are ready to tell you anything you want to know about the Shay and what Shays are doing in work like yours. This information, together with assistance in the study of your transportation difficulties, will be given freely and cheerfully, regardless of whether or not you are thinking of buying a locomotive just now.

LIMA LOCOMOTIVE WORKS, Incorporated

Lima, Ohio — 17 East 42nd Street, New York

For convenience in making inquiry use postal inserted in this number.

Getting a dipperful of mixed material with a long cut up the face of the bank. Notice the teeth marks, showing stiff digging. Their evenness means power behind the dipper.

Loading into the steel cars. In this soft pit, the caterpillar mounting has been a great time and labor saver, and has made the shovel much easier to handle.

The Excavating Engineer

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A Well-Equipped Brick Plant

The Wichita Falls Brick and Tile Company Are Turning Out 75,000 Brick and Tile per Day in Their Modern Plant

THE use of modern methods and up-to-date labor-saving equipment is the rule at the plant of the Wichita Falls Brick and Tile Company, Wichita Falls, Texas, which has a capacity of over 75,000 brick and tile per day.

Description of the Plant

The plant is located at the southeast corner of the city and includes 14 kilns, 9 for brick and 5 for tile. The brick kilns have a capacity of 350,000 brick each and the tile kilns a capacity of about 60,000, 5″ x 8″ x 12″ hollow building tile. Natural gas is the fuel used throughout the plant, about 3,500,000 to 4,000,000 cubic feet per kiln being consumed per day.

The clay pit consists of a ledge of bird's-eye clay, about 4 feet of gumbo, and 18 inches of clay. No stripping is necessary, as the clay is good brick and tile material almost up to the surface. The average height of the bank is about 16 feet.

Steam Shovel Operation

The clay is dug and loaded by a Bucyrus 18-B caterpillar mounted shovel, equipped with a ⅞-yd. dipper, 19-foot boom and 12-foot dipper sticks.

In order to get the best brick clay it is necessary to mix the materials from top to bottom of the bank. This insures a uniform quality of brick. This mixing is done by the Bucyrus shovel in a very satisfactory manner, as the clay is dug in long sweeping cuts from the bottom of the bank to the top, mixing several different strata in each dipperful.

As the photographs indicate, the digging is fairly stiff, as the teeth marks in the bank clearly testify. The Bucyrus easily takes out an average of 350 cubic yards per day, working, however, less than half the time.

Advantages of Caterpillar Traction

The caterpillar traction with which the Bucyrus shovel is equipped has proved to be a great time and trouble saver in this clay pit. Before the caterpillar mounted shovel was installed a shovel mounted on railroad wheels was used. This mounting was very inconvenient in the wet pit as rain and the soft ground caused many difficulties with the track and the cost of new ties was considerable. A half day or more was often lost by the shovel getting off the track. With the caterpillar mounting all these difficulties are eliminated. No track labor is needed and the shovel is much easier to handle in the soft pit.

Advantages of Scale Chamber

The Bucyrus shovel is equipped with a boiler scale chamber. As the water used is of rather

A general view of the plant of the Wichita Falls Brick and Tile Company giving a good idea of the arrangement of the buildings, the extent of the clay pit and the way it is worked. The Bucyrus shovel can be seen in the foreground, behind the 16-foot bank.

poor quality, this scale chamber has proved a great convenience. The shovel formerly used was not so equipped and it was necessary to clean the boiler several times a week. With the scale chamber boiler it has only been found necessary to wash out once in five or six weeks.

Other Equipment on the Job

Two-yard, all-steel dump cars, 30-inch gauge, are used for hauling the clay from the pit to the plant, a distance varying from 1000 to 2000 feet. There are 18 cars in service and five to eight are used per train. A 12-ton Davenport locomotive hauls the trains.

The total capacity of the plant is about 72,000 common brick and 5,000 building tile per 9-hour day.

Building Chicago's New Sewage Disposal Plant

How the T. J. Forschner Contracting Company Are Handling Their $5,000,000 Contract for the Chicago Sanitary District

A GOOD example of modern sewage disposal methods is the plant now being constructed by the Chicago Sanitary District to take care of all Chicago sewage south of 87th Street. This plant will be known as the Calumet Sewage Treatment Work. The T. J. Forschner Contracting Company of Chicago have the complete construction contract for this plant and are handling the big job with their usual efficiency.

Sewage will be pumped to the new plant by the Calumet Sewage Pumping Station which has a capacity of 1000 cu. ft. per second. This pumping station was recently completed by the Forschner Company.

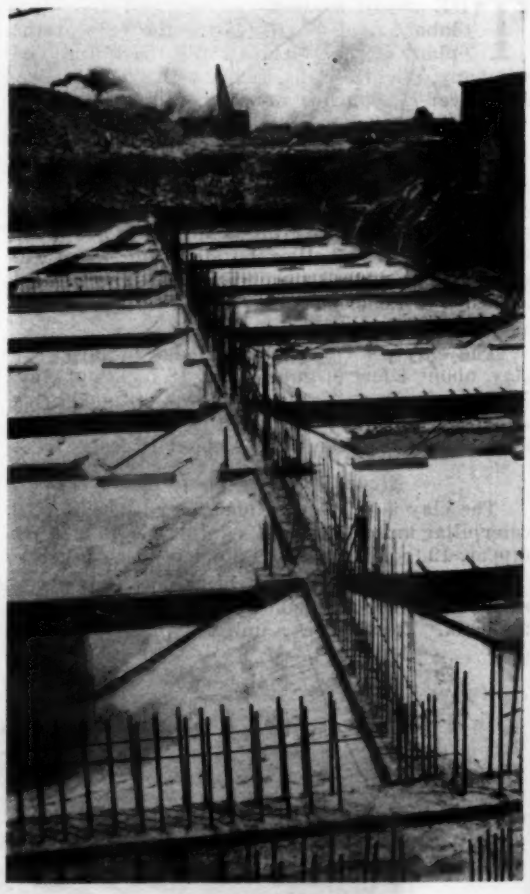
Plant Equipment

The following sewage disposal equipment will form the main parts of the new plant: 1 grit chamber, 40 feet wide by 120 feet long; 30 Imhoff tanks, constructed of concrete, 34½ feet wide by 103½ feet long; two activated sludge tanks; and one sprinkling filter, 130 feet by 248½ feet. In addition to the construction of the units mentioned above, which call for 170,000 cubic yards of excavation and over 30,000 cubic yards of concrete, the contract includes extensive piping and other equipment necessary for the operation of the plant. The total contract price was approximately $5,000,000.

Excavation

At the time this is written all excavation and a large part of the concrete work is finished. Most of the excavation was for the Imhoff tanks. The bottom of these tanks consists of inverted pyramids 30 feet square by 9 feet deep, the total depth of cut being about 25 feet. Two Class-14 Bucyrus dragline excavators handled the digging. These were equipped with 70-foot booms and 2 cubic yard buckets. These draglines were mounted on caterpillar traction.

The digging was mostly clay, ranging from soft yellow clay to hard blue clay. The output of the two machines was from 1800 to 2000 cubic yards per nine-hour shift. One shift per day was worked.



Imhoff Tanks, Partly Completed

Trimming Slopes with the Draglines

In excavating for the Imhoff tanks accurate digging was required to shape the bottoms properly. One of the draglines was equipped with a

From left to right, T. J. Forschner, A. J. Forschner, and W. P. Forschner.

Two Class-14 Bucyrus Draglines Taking Out Sticky Clay on the Excavation for the Filtration Beds

Class-14 Bucyrus Dragline Rehandling Excavated Material on the Dump

Another View of One of the Bucyrus Draglines Shown in the View Above

special square bucket with five teeth for accurate trimming. It was found easily possible to trim to within 8 inches or 1 foot of the final grade with the draglines. The final trimming was done by hand with pneumatic shovels.

The draglines loaded into 12-yard Western air dump cars. Thirty-six of these cars were in use on the job. The excavated material was hauled to the dump a short distance away where the dirt was rehandled by two other draglines, a Bucyrus Class-14 and a Marion Dragline. Part of the excavated material was overcast near the excavation to be backfilled later.

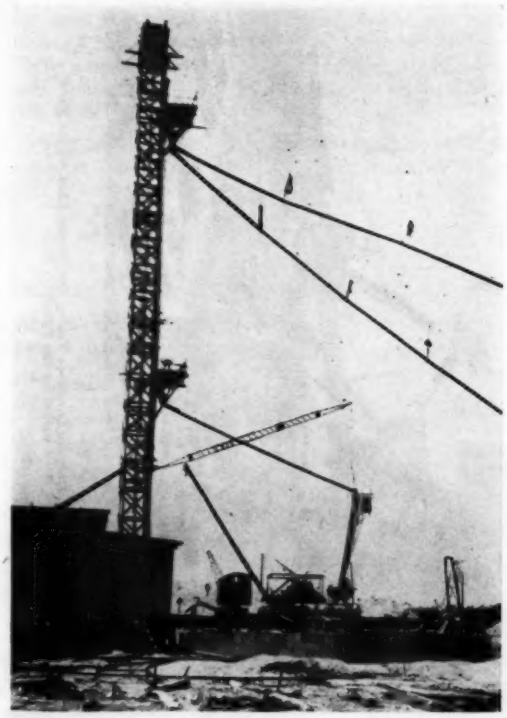
The caterpillar traction with which the draglines were equipped proved very useful on this job and made it much easier to move the machines over the sticky clay. For a time it was difficult to get coal to the draglines working on the dump on account of the soft ground where the machines were working but this trouble was eliminated by putting a Cletrac tractor on the job. The tractor ploughed through the mud without difficulty and kept the draglines supplied with coal under all conditions.

Of the total amount of excavated material 80,000 yards will be used for grading. The two draglines originally used for excavating will be used for grading and backfilling.

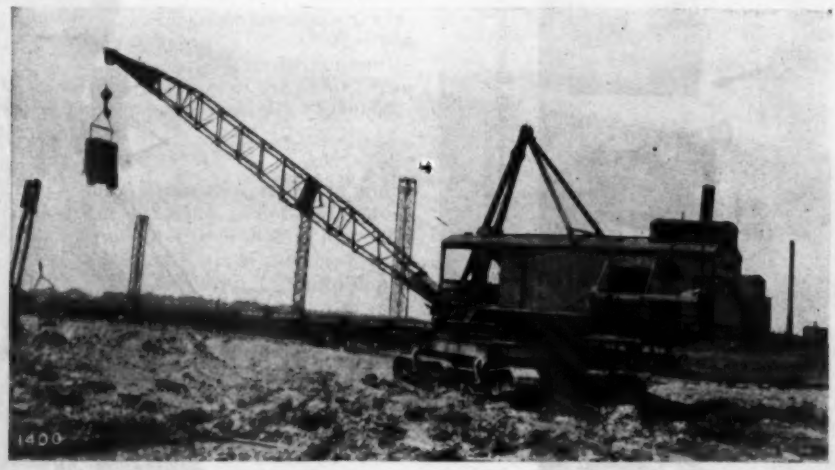
Other Equipment on the Job

Blaw-Knox metal forms and wooden panel forms are being used for the concrete work. For handling forms and other work around the job a P. & H. crane, two Brownhoist cranes and one Northwest crane are in use.

T. J. Forschner and A. J. Forschner are personally superintending the work. R. H. Burke is engineer for the contractors and L. B. Barker is resident engineer in charge of the work for the Sanitary District of Chicago. Work was started in October 1920 and the new plant will be completed in October 1922.



This shows part of the Lakewood concrete chuting equipment, with two locomotive cranes at work at the west end of the filtration plant.



Class-14 Bucyrus dragline working in sticky mud. Conditions like this show the value of caterpillar mounting. Western air dump cars can be seen in the background.

A Four-Mile Road Job Through Hilly Country

Handling Stiff Boulder Clay with a 1-Yard Shovel in New York State

THE State of New York, noted for its excellent highways, has recently added another stretch of good road to the extensive Empire State highway system.

This is the four-mile road between Palenville and Haines Falls, completed a short time ago by Ward & Tully, Inc., of New York City. The contract covered the complete construction of the road, including all necessary grading, excavating and surfacing.

The contractors started work December 1, 1920. Their excavating equipment consisted of a 30-B Bucyrus revolving shovel equipped with a 20-foot boom and 1 cubic yard dipper, and mounted on caterpillar traction. The total amount of excavation was 33,000 cubic yards, and as our photographs show most of this was in hard digging. The material was very stiff boulder clay. Most of the excavated material was loaded into 3-yard Western dump cars, and used for grading. Some of the material was overcast and the remainder hauled away in 1½-yard Watson dump wagons. The shovel was able to handle most of the excavation without blasting, but on some sections of the road, where the digging was practically solid rock, drilling and shooting was necessary. The rock was used to build fills, retaining walls, etc.

Bert Winans, pilot of the 30-B, and his fog maker, taking a 30-second rest to oblige the photographer. The boulders in the background were handled by the Bucyrus without difficulty.

An unusual feature of this job is that the entire four miles of the road are on 8 per cent to 9 per cent grade.

Thomas Tully, Vice-President of Ward and Tully, Inc., was general superintendent on the job. Bert Winans was at the levers on the 30-B.

The 30-B Bucyrus cutting a notch in the New York State hills. The digging is heavy boulder clay on this section of the road

Revolving Shovel Work on a Virginia Road Job

Description of the Pace Construction Company's Job on Virginia State Highway Project No. 104

WORK on Virginia State Highway Project No. 104, between Roanoke and Blue Ridge Springs, is approaching completion as this issue of The Excavating Engineer goes to press. This will provide a good road between these two points, along the route of the old State Highway and the main line of the Norfolk and Western Railway.

The contractors for this job are the Pace Construction Company of Roanoke, and they have made the dirt fly with their usual efficiency. The new road is 9¼ miles in length running for about 75% of this distance through clay and shale. The remainder of the grading is in very hard limestone rock.

The contractors are using a Bucyrus 14-B revolving shovel equipped with a 2/3-cu. yd. dipper and 11-foot dipper sticks, for doing most of the grading. The total amount of excavation required on the job amounted to about 90,000 cu. yds. As stated above a large part of this was limestone rock which was handled by the shovel after blasting. Our photographs show the character of the material. The Pace Construction Company report that the Bucyrus shovel has done very satisfactory work and that some good output records have been hung up. Under good conditions it is easily possible to load as high as 800 cu. yds. per day into the dump wagons.

Keeping the "Hay Burners" Busy

When loading wagons the yardage average per day is about 500 cu. yds. When side hill casting the yardage runs about 800 cu. yds. per day. Mr. Pace states that a better yardage would have been possible had it not been for the fact that the shovel was new and stiff and they ran rather cautiously.

Western 1½-yd. wagons are being used for hauling the dirt. The length of haul averages 300 feet and from three to five teams are in use.

Work was started on this job April 5, 1921 and the contractors expect to finish before January 1, 1922. F. L. Mays is Superintendent for the Pace Construction Company on this work, C. N. Thompson is operating the Bucyrus shovel, with J. E. Rozzaso keeping the boiler hot.

C. N. Thompson, operator, and J. E. Rozzaso, fireman, on the job on their Bucyrus. At the right is a good specimen of the kind of rock along the route of the new road.

Cutting a Notch in the Virginia Hills at the Rate of 600 Cubic Yards per Day

The surface left by the shovel. Part of the dirt was overcast and part hauled away in Western dump wagons.

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THE EXCAVATING ENGINEER PUBLISHING CO.

Bradlee Van Brunt, Manager and Editor

South Milwaukee, Wisconsin

Printed in the U. S. A.

A Successful Gasoline Shovel

It is not our custom to mention in our editorial column a new product which is announced elsewhere in our paper. However, we feel that the new gasoline revolving shovel described in this issue is sufficiently out of the ordinary to justify editorial comment.

Undoubtedly this is the age of gasoline. The perfection to which the internal combustion engine has been developed is one of the marvels of our time. Its rapid application to all branches of industry has been phenomenal. Excavating machinery has not lagged behind in this respect. Indeed, it was over ten years ago that the gasoline dragline was put on the market. However, the problems of applying this power to a shovel have been most difficult.

There are few types of machinery which have the peculiar characteristics of a shovel. The sharp retardation and acceleration, the sudden stalling loads, the quick reversals and the transmission of the power to the boom have proved sufficiently difficult nuts to crack to make the successful gasoline shovel trail behind the procession.

Before this, manufacturers have placed on the market several designs of shovels driven by a gasoline engine. We do not presume to comment on the success of these designs, but we believe we are correct in stating that no straight gasoline shovel has been produced until now, whose operation possesses to a satisfactory degree the very essential characteristics of the old dependable steam shovel.

Here is where this new one-yard revolving shovel is sufficiently unique to deserve particular note. Not only does it possess all the digging characteristics of a steam shovel of the same size, but it shows even greater power.

To the old steam shovel man, the most striking characteristic in its design is the fact that with no gears, clutches, chains, belts or telescopic shafting on the boom, this shovel has a positive, powerful thrust commensurate with a steam shovel. Not only this, but the dipper may be controlled with an equal nicety.

This shovel was under test seven months ago. During this period it has been engaged on road work, stripping a quarry, and loading trucks, wagons and dump cars with unqualified success.

We believe that it will fill a long-felt want in the excavating world.

"Dutch" Miller Killed

Charles C. Miller, familiarly known among steam shovel men as "Dutch" Miller was struck by a train and instantly killed near Pittsburg, Kansas, a short time ago.

The death of Mr. Miller will be a shock to his many friends as he was widely known and liked among steam shovel runners.

He was buried on December 10.

Unprecedented Public Work Forecast for 1922

The cities, counties and states of the country sold, during the ten months ending October 31st of this year, fifty per cent more bonds than during the same period of any previous year. The October sales—$108,076,143—have exceeded the sales made during the same month for the past decade by 70 per cent except in three instances. Moreover, there is still a strong demand for municipal bonds and the prices are good, and many more will undoubtedly be sold during the next few months.

The exact figures on which the above statement is based have been compiled by the "Daily Bond Buyer" of New York, and are as follows:

Total sales of state and municipal bonds in October and in ten months ended October 31st, for the past ten years:

	October	Ten Months
1921	$108,076,143	$946,504,868
1920	62,592,014	627,494,610
1919	117,284,139	634,775,848
1918	10,292,635	217,275,175
1917	22,834,348	389,598,640
1916	56,943,946	433,285,461
1915	27,620,693	422,985,369
1914	11,332,910	381,955,569
1913	33,772,990	327,817,224
1912	23,310,025	354,988,896

The "Bond Buyer" considers that the total for this year will certainly exceed a billion dollars.

With a good market for bonds, most materials at prices that cannot at present fall much lower and may rise, and the need and general desire to furnish work for the unemployed, there is every reason to believe that 1922 will be a record year for public works construction.

—*Public Works.*

Road Construction

Under the Federal Highway Act recently enacted, $75,000,000 becomes available to the states as federal aid in road construction, in addition to $15,000,000 for roads in national forests. The Federal Government has appropriated about $350,000,000 as aid in road construction in the past five years. The new appropriation, which must, like the others, be matched by equal state appropriations.

· FIELD NOTES ·

Maintenance and Upkeep of Motors on Electric Shovels and Dragline Excavators

III. How to Rewind Induction Motors

This is the third article of a series on the "Maintenance and Upkeep of Motors on Electric Shovels and Draglines." The first two articles appearing in our September and October numbers dealt with "The Maintenance of Motor Bearings."

Notwithstanding the ruggedness of the A. C. induction motor, it sometimes becomes necessary, due to burn-outs, etc., to replace a number of coils or possibly to rewind the motor before it can again be placed in service. For this reason, it will be found advisable to keep on hand a spare set of coils for each size and type of motor in order to insure repairs with the least possible delay after an accident.

These coils should be ordered from the manufacturer of the motor, complete with all necessary tape, slot insulation, etc., for rewinding. The complete nameplate rating of the machine including all identification numbers should accompany the order so that there will be no danger of getting material which is not identical, or which is not of the same quality as that with which the motor was originally wound.

Rewinding or replacing damaged coils should be done only by a competent workman, as a considerable amount of skill is required to place the coils in the slot without injuring the insulation, and to make the proper connections. Before removing any connections or coils it will be found advisable for the winder to make a diagram of the old connections in order to insure that the new winding will be identical to the old.

After removing the old coils, the slots should be gone over with a rough file to remove any burred edges on the laminations, and to clean the slots of all remaining particles of insulation. The new coils are then placed in position.

Before the coils are connected, it is customary to test for grounds, either a direct current line or a single phase low voltage A. C. line being used as a source of power in making a test of this kind. In general, grounds are caused by breaks in the insulation which may be due to carelessness of the winder or lack of skill in placing the coils in the slots. This test may be made by connecting one end of the coil to one side of the power line, and the other side of the power line to the motor frame, a sufficient number of incandescent lamps being placed in series with the coils to limit the flow of current to a safe value. If the coil is grounded, the lamp will glow. All coils should be tested in this manner.

After the coils have been connected, if a high voltage testing set is available, a test should be made on the insulation of the completed winding to insure that the coils are not grounded on the iron core, and that the insulation of the coils will withstand the rated voltage. The testing voltage should not exceed two times the normal voltage of the motor plus 1000.

The motor may now be assembled and should be given a running light test before it is put back into service to detect, if possible, any defects which may be present. If the motor has a wound rotor, the rotor should be short circuited as close to the slip rings as possible and the no-load speed of the motor is taken. This should check within a few percent of the rated speed. If the test speed of the motor does not vary materially from the rated speed, it should be kept under observation and allowed to run 30 minutes or an hour unless signs of trouble develop.

Short Circuits

Short circuits of a few turns or a single coil can be readily located as the coils will become hot in a short time. Their presence may be detected by feeling around the winding with the hand immediately after starting the motor and noting if some coils are warmer than the others.

Open Circuits

If the motor will not start, the presence of an open circuit in the motor winding is apparent. This open circuit may be located by means of the same equipment used for locating grounds, but in this instance, the lead which is placed on the motor frame should be connected to one end of the winding and the second lead connected to the other. If the lamps do not light, the presence of an open circuit is indicated. By separating the winding into several groups, the group containing the defective coil may be found by a process of elimination and the coils removed.

The subject of Rewinding of Induction Motors will be continued in a subsequent issue.

Afraid of the Boss

BY W. F. SCHAPHORST

If you think it pays to have your employees "afraid of you," read this:

It was decided to alter a certain piping job to make the pipe lines operate more efficiently.

The Boss, a rather high-handed fellow, put the job into the hands of his engineer with instructions to "do it right and do it quick."

The engineer hurriedly studied the problem and did what he thought was the best that could be done. He made a sketch showing what he proposed to do, explained the sketch to the Boss, and the Boss put his O. K. on the sketch.

The job as sketched involved the making of a

number of pipe bends, each piece of pipe being about 4 feet long, size 1¼ inch, threaded on each end. The work required considerable accuracy so the engineer gave out the bending and threading to a pipe bending contractor who did prompt, excellent work.

On proceeding to install the bent pieces of pipe, the engineer found that as they were made he couldn't get them in. He had made a mistake. He further found that he didn't need the bent pipe at all—that he could make the change with perfectly straight pipe and standard fittings and that if so performed the job would LOOK better and it would BE better.

However, $75.00 had already been billed on the bent, threaded pipe! What would the Boss say? Would the Boss deduct $37.50 from his pay? On a previous job $20.00 had been lost due to an error by the engineer and the Boss compelled the engineer to stand half of it, which was "No more than right" according to the doctrine of the Boss.

It was perfectly natural, therefore, for the engineer to "cover up" this $75.00 mistake. He convinced himself that it was necessary by all means to use those bent lengths of pipe. He would MAKE them fit—and he did.

To make them fit was no simple problem. It was necessary to cut off both ends and re-thread them. The bends made it very difficult to do the threading. Then the pieces were cut in two, each cut involving two more expensive threading operations, plus two pairs of flanges, plus a nipple.

Altogether, the job cost, completed, $250.00.

Using straight pipe it would have cost about $50.00.

Scrapping the bent pieces of pipe after the error was discovered and using straight pipe, the total cost would have been about $125.00.

The Boss today is unconscious of the error. He thinks the engineer did a very good job. He prides himself on his ability to "handle men."

SEND FOR YOUR INDEX

For Vol. XV Excavating Engineer from January to December 1921 Inclusive

NOW READY

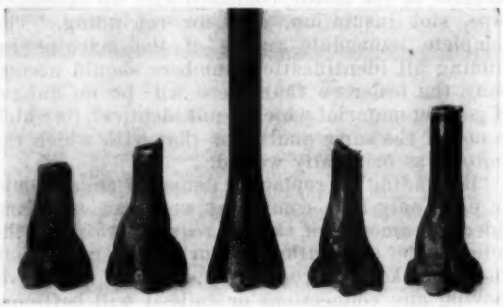
THE EXCAVATING ENGINEER
South Milwaukee, Wis.

The Blacksmith and Good Drill Bits

BY D. E. DUNN

Manufacturers of the drilling machinery can and do make good rock drills and drill steel sharpeners. However, they can never eliminate the personal equation of the blacksmith. It would seem that the most uninformed persons would realize that success in rock drilling is almost entirely dependent on the blacksmith turning out good steels. The Drill Steel Sharpener has gone a long ways toward improving the quality of bits made, but, even with this improved and special machine, proper bits can be made only with a little care and judgment on the part of the blacksmith.

One of the largest manufacturers of rock drilling machinery not long ago had a complaint that one of his jackhammers was falling down on the job; in the customer's own words—"The drill didn't have any pep." One of the Company's representatives investigated this case and the above photograph shows the actual condition of the bits that were used in this mine. The bit shown in the center was made by this representative with the same machine as the other four bits shown, demonstrating clearly that it was not the fault of the sharpening machine. Is it any wonder that the jackhammer didn't have any pep?



It is found that a large number of drill complaints can be traced directly to bad blacksmithing against which the manufacturers are waging a continual campaign of education. It illustrates also the problem with which the representatives of mining machinery companies are frequently confronted; namely, complaints and dissatisfaction of sincere but not thoroughly informed operators.

The Best Available

The new servant had presented her references, and the lady of the house read them over with a doubtful eye.

"I'm not quite satisfied with these, Bridget," she said.

"Nayther am I, mum," returned Bridget angrily, "but they're the best the ould fool would give me."

—*American Legion Weekly.*

DEVICES YOU OUGHT · TO KNOW ABOUT ·

A New Gasoline Revolving Shovel

A gasoline operated shovel with no engines, motors, shafts, chains or gears on the boom and yet with an actual digging power greater than a steam shovel of the same size is the most recent innovation in the manufacture of excavating machinery. Such a shovel has recently been announced by the Bucyrus Company of South Milwaukee, Wisconsin.

This machine, which is known as their 30-B gasoline shovel, marks a distinct advance in the design of excavating machinery. For more than ten years Bucyrus dragline excavators have been operated by gasoline engines, but the application of this power to the revolving shovel involved more difficult and intricate problems, chief among these being the efficient transmission of power to the thrust without excessive complications in design, and the obtaining of digging power commensurate with that of a steam machine of similar size.

Both of these problems have been satisfactorily solved in this new shovel. Furthermore, the manufacturers have succeeded in obtaining in this new machine the digging characteristics of the steam shovel with its quick reversals, its powerful thrust of the dipper and its dependability.

Before being put on the market, this shovel was used for a period of six months for overcasting and loading dump cars in sticky clay, for grading for a concrete road where the cut averaged five inches in

30-B gasoline shovel removing 5 inches from the crown of an old tar macadam road. Contractors stated that it could outdig a steam shovel on this job.

old macadam, and for stripping a stone quarry and loading trucks in a stiff hardpan containing many boulders.

Its unqualified success, therefore, has been completely demonstrated by actual test in the field.

The outstanding features of this shovel may be summarized as follows:

It is far simpler than a steam, electric or other types of gasoline shovels and has fewer parts to maintain and keep in order.

Its digging power is even greater than a steam shovel of the same size.

It has all the well-known performance characteristics of a steam shovel, even to the shaking of the dipper to relieve it of sticky material.

It will give 20% greater yardage per gallon of gasoline than a gas-electric shovel of the same size, or than any other type of shovel whose power is derived from a gasoline engine. This is due to less mechanical losses and less waste energy.

Digging heavy, sticky clay and loading dump cars. The dipper was cleared of this sticky material as easily as with a steam shovel.

The gasoline engine with which this shovel is equipped is over twice as heavy and rugged as the type of commercial gasoline engine sold for this purpose. It was designed especially for this shovel from specifications offered by the Bucyrus engineers and consequently it is suited for the exacting requirements of this unusually severe service.

It is entirely inclosed and thus dust proof, a feature of much importance for excavating work.

The engine is a four-cylinder, slow-speed type and will develop 55 H. P. at a speed of 400 R. P. M.

The shovel carries a 1-yd. dipper.

This machine may be equipped as a dragline excavator, a crane or a clamshell machine with simple changes which may be made in the field.

The 30-B gasoline shovel fills a long-felt want, for those whose work is in arid regions or where coal is scarce and expensive and feed water of poor character.

A bulletin has recently been issued describing and illustrating this machine in detail which may be obtained by writing the Bucyrus Company, South Milwaukee. One of the postal cards enclosed in this number may be used for this purpose.

An Unusual Belt Conveyor Installation

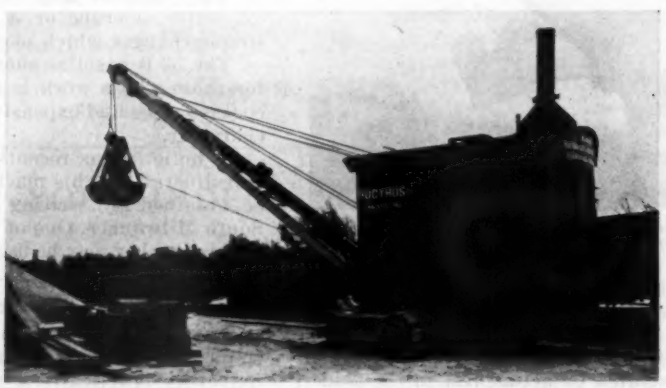
The Tata Construction Co., Ltd., of Bombay, India, have been using two Haiss portable belt conveyors practically a year for unloading sand and brick from barges at the railway cars which stand alongside the slip, and also for loading sand from ground storage into bullock carts. The Tata Construction Co. is the constructing unit of the Tata Iron & Steel Co., who control probably the largest steel mines in India.

The portable belt conveyors were equipped with

An 18-B Bucyrus revolving shovel mounted on caterpillars at work at Shibukawa, Japan, for the Imperial Japanese Railways.

One of the three 30-B Bucyrus 1-yard revolving s
Hydro-Electric Department of Tasmania.
feet above the sea level. We expect
issue describing the operati

35 years of faithful servic
That is the record of thi
shovel illustrated above.
shipped in April 1887 and
derrick in the Findley Y
Railway at Birmingham,
photographer caught it i



These two views illustrate the operations of the Badger Sand and Gr
hand view shows a 14-B Bucyrus revolving shovel equipped with
unloading crushed rock from gondolas. The right-hand view
The revolving shovel is nearly hidde

evolving shovels mounted on caterpillars owned by the
'asmain. This machine is digging a canal 3000
We expect to publish an article in a future
the operation of these machines.

A Class-9½ Bucyrus electric dragline excavator equipped with a 45' boom and a 1½ cubic yard bucket, loading dump cars in the plant of the Bibb Brick Company near Macon, Georgia.

hful service and still on the job.
ord of this old Bucyrus steam
ed shows. This machine was
1887 and is still in service as a
Findley Yards of the Southern
mingham, Alabama, where our
aught it in operation.

nd and Gravel Company of Milwaukee at Waukesha, Wisconsin. The left-
pped with a 20' foot boom and ¾-yard clamshell bucket. It is shown
hand view shows the same operation from another point of view.
arly hidden by the rock pile at the right.

a receiving hopper that would eliminate the necessity of placing the brick carefully on the belt, and they were thrown on the tail end where they could be conveyed into cars.

Handling Sand with the Haiss Conveyor

These machines are operated by kerosene engines of 5 H. P. and have given very good results. Assuming that the native labor in India receives one-tenth of the wages that laborers do in this country, and taking into consideration the fact that conveying machinery is a money saver and labor aid under these conditions, it can be readily seen how much more of a saving can be made in this country by using labor-saving devices as compared to hand methods.

The belts are 25 feet long, equipped with a 14-inch wide, four-ply Goodyear rubber belt, and have a rated capacity of approximately one yard a minute. They are mounted on two wheels which are equipped with roller bearings, making it very easy for two men to move the belt to different parts of the yard.

Simplicity in construction and operation is the keynote of a successful machine used in countries in Asia, and the fact that the Haiss belt conveyors are used there with great success shows that the machine is a very satisfactory one for the use for which it is intended. Write the Geo. Haiss Manufacturing Co., 141st St. and Rider Ave., New York City, for detailed information regarding these belt conveyors, using one of the blank postals enclosed in this magazine.

SHOTS FROM THE · FIRING LINE ·

Canada

Western News

Mr. W. A. James, Assistant Chief Engineer of the Canadian Pacific Railway is making rapid recovery from the serious accident reported in this column last month.

Mr. W. M. Scott, Chairman of the Greater Winnipeg Water District Administration Board, has just returned from a visit to several points in the United States where he has been making an inspection of modern gasoline cars with a view to procuring one for the Water District Railway. It is estimated that a saving of sixty thousand dollars a year could be made by the use of a gasoline car instead of a steam train.

Mr. G. R. Pratt, formerly with the Canadian Pacific Railway, has been appointed Fuel Engineer for the Alberta Government.

Messrs. A. R. Tomlinson, Harold Dancer, Charles Poole, G. Wilson and Peter Nadobney are spending a few days in Winnipeg. They have been employed on the reservoir and dam construction work at Melville and Hubbard, Sask., on Tomlinson & Fleming's contract. These two jobs are now in the final stages of completion. On the Hubbard work a Bucyrus Class-14 dragline was used and on the Melville job a Bucyrus Class-7 dragline, a Bucyrus 14-B shovel and a Marion Class-20 were employed.

Dr. J. H. King, Minister of Public Works for British Columbia, announced in the Legislature recently that the government favored the Hope-Princeton route, known as the Dowdney Pass road, in preference to the other three routes considered, for the last link of the transprovincial highway. He estimated the cost at half a million dollars. This route is seventy miles long. There would be forty-two miles of new construction required and 20 miles of reconstruction. Work will likely be commenced early next spring.

Negotiations have been entered into between the West Kootenay Power and Light Company's hydro-electric plant at Bonnington Falls and the Okanagan Power Co., near Oroville, Wash., for an exchange of power. The former company, of which Lorne Campbell is manager, intends to commence building a transmission line from Penticton, through Naramata to Kelowna, shortly. A branch line from Penticton to Summerland will be constructed next year.

An early start on the construction of new permanent bridges on the C. P. R. to replace those washed out in the recent floods, work upon the replacement and renovation of all portions of the damaged grade, and the possibility of an early start on the new C. P. R. pier on Burrard Inlet were foreshadowed by Vice-President D. C. Coleman of the C. P. R.

The contract for the construction of the third section of the Stevenson Jetty at the Fraser River has been awarded by the Dominion Department of Public Works to J. S. Connell, Ltd., Vancouver, at $61,981 unit price.

Another model settlement will replace the ruins of Brittania Beach, B. C., but the site of the town will be moved slightly to avoid the old creek bed on which the residential part of the town stood. President Scholey, of the Brittania Beach Mines Corporation, has decided against risking another such flood in the old creek bed.

Plans for work on the Balaclava extension of the English Bay sewerage outfall are at present before the Vancouver and District Joint Sewerage Board. It is proposed to undertake this work at a cost of $268,000. The scheme will be submitted to the City Council and the councils of the various municipalities concerned.

It has been announced by Robert Tyhurst, of the Fraser Timber Syndicate, that the erection of a paper mill near Fort George to cost appproximately $6,000,000, will be undertaken immediately, provided negotiations with the British Columbia Government for leases on timber limits are successful.

The contract for the construction of the light tower at Carmanah Point light station has been awarded by the

Dominion Public Works Department to Hodgson, King & Marble, of Vancouver, at $30,000.

The Dominion Construction Co., of Vancouver, has been awarded a contract by the Municipal Council for certain water works extensions, the contract price being $29,795.

Eastern News

The recent change in the Federal Government at Ottawa is a matter of keen interest for all those connected with the construction industry. The new Government was elected on a platform of economy, and the public awaits its decision after it has come into office. It is hoped, however, that many of the much needed public works will be gone ahead with.

The tenders for sections 3 and 4 of the Welland Canal which were received some weeks ago were called off and new tenders are expected to be asked for shortly.

The Provincial Government of Quebec has a considerable road programme to undertake for the coming season and it is hoped that nothing will interfere with the carrying out of same. A large meeting was held at Sorel recently at which the construction of a road from Levis to St. Lambert was strongly advocated. This would give the South Shore the same kind of communication as is now possessed by the North Shore between Montreal and Quebec.

The Foundation Co. has the contract for putting in the foundations for a large Court House which the Government is constructing in Montreal.

The Ratepayers of Hull, Quebec, passed a by-law authorizing expenditure of $289,700 for following improvements: Aqueduct $83,700; sewers $85,500; paving $80,500; viaduct $40,000.

A new incorporation is the W. G. Cornell Co. Ltd., with head office at Montreal, capital $50,000, to carry on the business of general contractors and engineers.

The Board of Trade at Calgary, Alta., is urging the Department of the Interior at Ottawa to continue the operations of survey parties on the William Pearce Irrigation Scheme throughout the winter months, so that the necessary data required to estimate the cost of this development will be available in the spring, thus eliminating the possibility of delay in the carrying on of operations during next year.

About seventy-five miles of permanent pavement will be laid by the Ontario Department of Highways during 1922, according to plans given tentative approval. This list, upon which tenders will be called early in the spring, is not final, as it stands, but it represents substantially the work the government has in view, and forecasts an expenditure of at least $4,500,000. The sections of the provincial system chosen for next season's work include 39.95 miles of concrete pavement, 25¼ miles of asphaltic concrete and 12.65 miles of bituminous penetration.

In addition, the plans call for nine miles of macadam roadway, 43.8 miles of macadam base course, 43¾ miles of earthwork and rockwork and a considerable amount of other construction, including the Cooksville subway, the Bloor Street east subway, Binkley's subway, the filling in of the northerly two spans of the Belleville-Prince Edward Bridge, 1,000 culverts and 300 miles of grading.

The Department has not yet completed its plans for gravel surfacing, which will be carried on extensively during the season, largely by day labor.

Tenders for construction of Temiskaming and Northern Ontario Railway will be received until January 9th at the Secretary-Treasurer's office, Mr. W. J. Maund, North Bay, Ontario. The work will cover construction of the road bed, track laying, ballasting, and fencing about seventy miles between Cochrane and New Post. The Chief Engineer, Mr. S. B. Clement, North Bay, can furnish specifications and other information.

The list of proposed contracts for 1922 prepared by the Provincial Highway Department has been made public since December 1st. This covers some 300 miles of road, including 37 miles of concrete. This earlier announcement of the programme has enabled contractors to view the sites of the work over winter and gather data in good time for the bidding. It is not expected that bids will be invited before February; meantime the specifications and quantities are being prepared by the Engineers and it is said that they may be filed for the public at intervals as each is completed.

We understand that the Canadian National Railways have had parties in the field and completed surveys and contemplate building cut-off between their lines in the vicinity of Long Lake, Ontario, and the Grand Trunk Pacific Railway. This will involve some 30 miles of line.

The Ontario Highways Department is inviting bids for January 2nd on 100,000 tons of broken stone, and it is very likely that they will ultimately purchase three or four times that amount for spring delivery. Altogether 1922 promises to be an active year in Ontario for the road builders. Almost half the motor-driven vehicles in Canada are owned by residents of Ontario and this is possibly one of the inherent reasons for the people committing themselves to the broad policy of good roads.

The Department of Public Highways of Ontario have just published their last annual report. It shows that the county road system embraces about 10,000 miles of road; the year's operation showing 272 miles of new road built under the Department's supervision, of which 11½ miles are concrete, and 32 miles bituminous surface, bridges over 10-ft. span totalled 163 and culverts of all kinds 1725. The report contains 100 pages and summarizes the work done in each county.

The Canadian National Railways have recently opened up their new station at Horn Payne, Ontario. Horn Payne is the divisional headquarters for the Superior Division of this line. This station was built by the Bridge and Building Department of the Railway.

Montreal and Toronto interests are promoting a Company to put a new type of asphalt pavement on the market. It is said that this will be constructed of fibre at a large saving in the more expensive materials. Announcement of details will be shortly available.

The York County Road Commission, Toronto, have not yet announced their road programme for 1922 and it is not likely that anything can be announced until after their estimates are considered; this will probably take place at their meeting on February 16.

A heavy piece of road work will be undertaken shortly by the York County Commission covering 2½ miles of road on the Markham Whitechurch Township Line. It will involve the excavation of 43,000 cubic yards of earth. This work was sanctioned at the December session of the York County Roads Commission.

There will be a strong contingent from Ontario at the Good Roads Show in Chicago in January. It is very likely that the Hon. W. A. McLean, Deputy Minister of Public Works and Highways, will be in attendance, and possibly some other of the Provincial Officials. The York County Roads Commission will be represented by Mr. E. A. James, County Engineer, and two Commissioners, Mr. G. S. Henry and Mr. J. Guardhouse. A number of contractors from Ontario intend going.

The Canadian National Railways have completed the diversion of their line, eliminating the diamond crossing over the Toronto North Bay line of the Grand Trunk Railway at Washago, Ontario. This work was done by the C. N. R. forces.

Central States Notes

H. A. Mansfield of Indianapolis was in Chicago during the month.

The annual meeting of the Missouri Valley Association of Sand and Gravel Producers was held at Kansas City on December 8th.

Mr. C. D. Smith of Memphis spent a few days in Chicago recently.

Mr. J. W. Ross, Newton, Iowa, was a visitor in the Windy City during December.

H. A. Culbertson of Youngstown paid Chicago a visit this past month.

Mr. Lucien Merritt of Minneapolis stopped off in Chicago on his way there from New York. He has two electric dredges at work on the Mississippi.

Inter-Mountain News

BY H. N. STEINBARGER, DENVER, COLORADO

A drive for $100,000 by the National Park to Park Association is nearing a successful close, successful because it will be used in a mighty good cause, that of promoting the hard surfacing of all highways connecting all National Parks. The constantly increasing tourist travel to all Parks demands roads that will stand up under the increased traffic. A great many very good construction jobs will result which are needed out in this western country.

A nice piece of work will result from a campaign of the Civic Association of Boulder, Colorado for aid from the U. S. Forest Service to build eight miles of road to the Arapahoe Glacier. The city of Boulder and State of Colorado jointly constructed the road to within eight miles of the Glacier and it is estimated that $45,000 will be needed to complete the project.

Recently the old Colorado Midland Railroad was junked by the present owners. All rails, rolling stock, shops, etc., were sold. This left the old road bed from Divide near Colorado Springs to New Castle, approximately 200 miles in length, which was presented to the State of Colorado for a State Highway. The road bed is 16 feet wide, has wide easy curves and a maximum grade of only 4% and will make a wonderful highway with comparatively small expense to the State and Counties through which it passes. Surfacing material necessary to make it into a splendid highway will be found along the entire right of way. The expense will be divided between State, Counties and no doubt by appropriations from the Federal Government. Some good jobs for contractors in this section will result it is hoped in the near future.

Charlie Barker came to Denver for the Holidays; where he gets so much pep is a mystery. One thing about Charley is that when he plays it's all play and when he is on the job he is all work. "Some goer," we say.

J. H. Wasson, "old timer" shovel engineer is now making his headquarters in Denver. He is looking for a big winter job. If he doesn't get it soon he will rival Jim Davies in avoirdupois. Gosh! that will be going some! But Jim can walk on his hands and feet without bending his knees. Where he puts his front is a mystery.

There will be a nice stretch of highway work between Canon City and Florence, Colorado. Nine miles for some contractor if the Colorado State Highway Commission secures Federal Aid. Approximately $86,000 is the estimated cost. "Here's hoping."

Colorado State Highway bonds are still going strong. The entire $2,000,000 has been sold. Another $3,000,000 will be sold for 1922 work. With a like amount from the Federal Aid Funds this will mean much construction and much bidding, keen competition, also we hope much profit to inter-mountain district contractors.

One of the most momentous Colorado River conferences ever held, international in its scope, was opened at Riverside, December 8, for a three-day session under auspices of the League of the Southwest. Over three thousand organizations in Arizona, California, Colorado, Nevada, New Mexico, Utah, Oklahoma and Texas were represented and governors of all the above states were present.

Iowa

William Dutton of Boone, Iowa, was awarded contract by Winnebago County for 21,716 cubic yards of earth excavation on Primary Road Project No. 120.

Mr. Dutton will grade his road east and west through Thompson.

Louisiana

The Thomas Gravel Co., which has been incorporated with I. L. Thomas as manager, A. W. McMichael as vice-president and R. C. Baker as secretary-treasurer, has leased land containing from 5,000,000 to 10,000,000 cu. yds. of road gravel and railroad ballast, and will erect plant buildings, including office buildings, commissary, boarding and employees' houses, and will also construct a six-mile railroad and switch tracks at Alexandria.

Mexico

Plans are being worked out at Nogales for a new railroad to extend from that city in a general southwesterly direction to Port Lobos or some other port on the Gulf of California. The road would be approximately 200 miles long, and would traverse a potentially rich agricultural, cattle and mining section now lacking transportation facilities.

Nebraska

Churchill County will build and maintain a railroad spur connecting with the Southern Pacific tracks at Fallon.

North Carolina

The Southern Power Co. has awarded a contract to the Bolton Construction Co. of Marion, and Reed & Lowe of Charlotte, for building the 3½-mile railroad connection from Mount Holly to the site of the proposed Mountain Island dam, on the Catawba river, the former doing the grading and the latter building a trestle over Dutchman's creek.

J. E. Fulghim, chairman, D. J. Weaver and others of Asheville, N. C., have been appointed to consider a plan to extend the Weaverville R. R. from Weaverville to Burnsville.

An additional $50,000 allotment was received by District Engineer's office to be used in dredging and other work on Cape Fear River between Wilmington and the sea. Maj. Milo P. Fox, U. S. A., officer in charge of the engineer's office.

Northern States Notes

W. R. Larson Construction Co., Sioux Falls, South Dakota, received contract for grading 9.23 miles of road in Decatur County, Iowa, F. A. P. No. 122. 126,356 cu. yds. of excavation are involved.

The Mankato Construction Company, Mankato, Minnesota, have received contract for constructing sewers in Rochester, Minnesota. The amount involved is $42,000.

Walker & Potter, Thief River Falls, Minnesota, were low bidders for construction of County Ditch No. 13 in St. Louis County. $235,000 are involved.

There has been much building activity at the Sagamore Mine of the John A. Savage & Company at Riverton, Minnesota. Work is being pushed on the outlet track and also on the new drying plant which is under construction. When completed, the drying plant will be the most modern on the ranges and will have an estimated capacity of approximately 80 tons per hour.

The ore shipping season for 1921 has just been closed and a total of 22,800,000 tons of ore were shipped during the season. This does not compare very favorably to last year's shipments which amounted to 58,527,227 tons. It is the general feeling on the ranges that next year's shipments will run into the neighborhood of 40,000,000 tons.

Stripping operation at the Hull-Rust Mine of the Oliver Iron Mining Company at Hibbing, Minnesota, are being pushed, the larger part of the work being done by their 225-B Bucyrus shovel. It may be of interest to the readers to learn that a total of 40,000,000 cu. yds. of overburden have been removed from the Hull-Rust-Mahoning Pit to date.

K. Yoshizwa of Tokio, Japan, Chief Engineer for the

Mitsui Mining Company, completed in November an extensive trip over the ranges. The Mitsui is the largest holding company in Japan, their interests including iron, copper and zinc mines.

The Carnegie Steel Company have now twenty-five out of fifty-nine blast furnaces in operation. The Lackawanna Steel Company has three of its nine blast furnaces in operation. The American Steel & Foundries Company who have been operating during the fall at from 25% to 30% capacity will be on a 60% basis this month. The open-hearth furnace department of the National Tube Company at Loraine is now operating at full capacity, the remainder of their plant is operated at 60% of capacity.

There has been a very large reduction of the surplus copper on hand. The sales for November totaled from between 160,000,000 to 170,000,000 lbs.; a large percentage was for domestic consumption. The general outlook calls for an optimistic attitude. The surplus is being reduced at a rate of about 60,000,000 lbs. per month and it is expected that the copper industries will be on a normal basis by next spring.

The Oliver Iron Mining Company are pushing the stripping of the Little-Prindle Mine at Nashwauk and employing 125 to 150 men in this work. A 300-ton Marion shovel is being erected and it is likely that another shovel will be added later.

A large road letting was held at St. Paul on November 29th and 30th, the work let was mainly graveling of roads and the work is being pushed at the present time mainly with the idea of relieving the unemployment situation. An exceedingly large number of bids were received and prices on an average were very low. It is very likely that a number of the lower bidders may have difficulty in completing their work and coming out with a whole skin.

Mr. A. M. Gow, Assistant Chief Engineer of the Oliver Iron Mining Company, who has been very seriously ill, we are glad to report has materially improved and his friends hope to be able to see him soon again at his desk.

The Red Lake Northern Construction Co. of Bemidji, Minnesota, is planning a 130-mile logging railroad, northwest from Redby through Red Lake Indian reservation, through Grygla to Roseau and South Junction on Canadian border; thirteen miles to be started during December. Grading will be done by day labor under supervision of J. J. Opsahl, president. Other stretches are to be arranged for later. The cost of the project is given as $2,000,000.

Oklahoma

The Midland Valley R. R. has awarded a contract to R. L. Plunkett, of Pawhuska, to build a branch line from Foraker, into the Osage oil field. There are three subcontracts.

Work will start soon on the construction of a new railroad near Oklahoma City, by a company incorporated at $250,000, with headquarters at Pawhuska. E. S. Schidler and J. W. Keith of Pawhuska are interested in the project.

Notes from the Pacific Coast

Jack Doyle was a recent visitor in the Portland office, and reports his work at Woodland, Washington, practically completed. He was operating an 18-B Bucyrus shovel owned by the Star Sand Company and which has now been turned over to Ray & Seidell and they are using the machine near Kelso, Washington.

During the recent storm, sleet and hail covered the Columbia Highway some 25 miles east of Portland and the road is still impassible, though steps are now being taken to remove the worst of the ice and snowbanks and it is probable steam shovels will be employed.

Mr. Wm. von der Hellen, a contractor of Eagle Point, Oregon, was a recent visitor to our Portland office.

The J. A. McEachern Company quite recently secured the job of enlarging the tunnel on the line of the O-W which was recently burned out near Mosier, Oregon, and when the bore is completed they will line it with concrete.

Highway work is not being prosecuted vigorously just now except in a very few instances, owing to recent very bad weather. There are, however, some very good jobs on which bids were asked December 15th, and shortly after the first of the year we look for considerable activity in highway building.

The logging and lumber industry continues to improve, although slowly, and everyone counts on a period of much activity during 1922.

Rajotte, Winters & Co. have practically completed their work near Underwood, Washington, and are moving their plant to storage.

Edward George and his son Edward George, Jr., are operating a Marion Model 25-C for the Southern California Edison Company on their Project at Big Creek, California

Looking Up the River at Hot Springs, Near the Camp

View of Camp 61, Southern California Edison Company, Big Creek, California

digging a 15′ x 15′ tunnel through solid rock. Their enthusiasm for California as a place to live and work in can well be appreciated by the accompanying photographs which they sent us to make other shovel men envious.

The San Joaquin Light and Power Corporation of Fresno filed with the Federal Power Commission, Washington, D. C., for preliminary permit for a large development on the South Fork and main stream of the Merced River, in Mariposa County, California. The Company proposes to construct a large reservoir, three conduits, two diversion dams, and three power houses on the south fork and one diversion dam, one conduit and one power house on the main stream. The total development will amount to approximately 110,000 horse power.

Application No. 248 has been filed by the Southern Sierras Power Company, C. A. Poole, Riverside, Purchasing Agent, for a power project to be located on Bear Creek and Santa Ana River in Riverside County, California, Angeles National Forest. The Company proposes

to divert the two streams mentioned above to a common power house having an installed capacity of 25,000 horse power.

Application No. 251 has been filed by R. T. Harding for a preliminary permit for a proposed project which contemplates the diversion of water from Bucks Creek and Grizzley Creek, tributaries near the North Fork of Feather River, to a common forebay and power house to be located on the Feather River, Plumas Co. Total development will be about 10,000 horse power, the proposed use of the dam being for mining and manufacturing purposes.

General Lansing Beach, Chief of Engineers, U. S. A., recently recommended to Congress that a channel forty feet deep and 2000 feet long be dredged through the sandbar five miles out of the Golden Gate, California. The work would call for an appropriation of $530,000 and an annual maintenance appropriation of $100,000.

Contract was awarded to P. B. Engh, 341 Pacific Electric Bldg., Los Angeles, for improvement of Flood channel of Ballona Creek from Bay Street to Pacific Electric Railway, work involving 40,000 cu. yds. earth work. The bid of Engh was $10,400.

The diversion dam that is to turn Fall River into the Pacific Gas and Electric's 10,160-foot tunnel is almost completed. It is 600 feet long, or about ten times the width of the river. It is made long, so what water is not diverted into the tunnel will not back up and flood the valley above the dam. There will be a little thin film of water pouring over the dam. There will not be much water left in Fall River for the tunnel is to drink up 99% of the flow.

The canal from the dam to the tunnel entrance is 1200 feet long, 110 feet wide at the top, 50 feet wide at the bottom and 30 feet deep. The amount of the excavation at the head of the tunnel may be grasped in part when it is stated that the digging alone cost $100,000.00.

The Klamath-Shasta Valley Irrigation District, Roy E. Swigart, Secretary, has entered into contract with the U. S. Reclamation Service to make surveys by which to determine the feasibility of a project for the Klamath-Shasta Valley Irrigation District estimated to cost $15,000,000, consisting of construction of dams and ditches, irrigation of 150,000 acres and development of 100,000 horse power hydro-electric. Four crews are in the field at the present time making a topographical survey and other needed surveys will start in the spring.

Contract has been awarded to Sherer & Crowley, Pacific Electric Bldg., Los Angeles, who bid $0.57 per cu. yd. for grading the Pozo-San Juan Grade, work involving approximately 118,470 cu. yds. excavation including borrow.

Of $75,000,000 available as Federal aid for road construction under recently enacted law, following sums have been apportioned to the states named: Arizona, $1,054,000; California, $2,462,000; Idaho, $939,000; Nevada, $953,000; Utah, $849,000; Washington, $1,104,000. In its distribution of surplus war materials for road-building purposes amounting to about $150,000,000, the Department of Agriculture has thus far delivered materials valued at the following amounts: Arizona, $2,041,000; California, $3,688,000; Idaho, $1,474,000; Oregon, $1,662,000; Nevada, $1,182,000; Utah, $1,334,000; Washington, $1,392,000.

By a majority of 2 to 1 the Merced Irrigation District voted to issue bonds in the amount of $12,000,000 for the construction of works of the District, to be known as the *Exchequer Project*, as per modified plans prepared by Engineer E. Court Eaton, 656 O'Farrell Street, San Francisco.

Contract has been awarded to Palmer & McBryde, 503 Market Street, San Francisco, at about $20,000 for the filling of a trestle approximately 400 feet long over a depth of fill 65 feet, involving 33,000 cu. yds. fill and concrete culvert 35 feet long to be placed under this fill, work to be done for the Yosemite Valley R. R., M. L. White, Merced, General Manager.

Contract has been awarded to United Dredging Co., Central Bldg., L. A., who bid $37,340 on an alternate bid for dredging an area about 2,000 feet in length at proposed site of drawbridge, Cerritos Channel, Los Angeles Harbor, and filling roadway in Badger Ave., work involving 110,000 cu. yds. earthwork, this alternative being based on proposal of completing the fill from other sources rather than from excavation.

The Fred C. Franks Contracting Company, Merchants Exchange Bldg., San Francisco, have completed the work which they have been carrying on at Arbuckle with their Class-7 gasoline dragline. They are looking for another job for this machine which is in excellent condition, and would be interested in hearing about any work suitable for it.

The San Diego and Arizona Railway has begun the construction of a 25-mile project, the same starting at Maria, a station on the line four miles west of Dixieland. The principal purpose of the proposition is to tap a rich gypsum deposit owned by the Imperial Valley Gypsum and Oil Company. The property of the company embraces about 400 acres of what engineers state to be pure gypsum, and it is expected that 1,000 tons a day will be produced. The manufacturing plant will be located at Maria.

The Utah Pacific plans to construct a line running from Juab to the Red Creek coal fields, about seventy-seven miles, a considerable portion of which consists of heavy digging.

Surveys are now being made, and applications Nos. 2608, 2611, 2612, and 2613 have been filed with the State Water Commission by Fred P. Tuttle, Jr., Auburn, for 200,000 acre feet per annum and 600 sec. feet from the Rubicon River and the Middle Fork of the American River in Placer and El Dorado Counties, for power development and irrigation purposes. A dam 170 feet high, 2,200 feet long on top, 60 feet long on bottom and 20 feet wide on top will be constructed.

Plans and estimates have been made by W. W. Hoy, City Engineer of Santa Ana, and O. E. Stewart, City Engineer of Anaheim, for the construction of a joint outfall sewer to the ocean, and a screenings and disposal plant. Total estimated cost of works, including rights of way, is $544,807.45. Bonds will be issued by City of Santa Ana and Anaheim, to cover the cost of construction of this sewer.

With the incorporation of the Arizona Barium Company, another one of Yuma county's many resources will be developed. It is not generally known that some of the richest deposits of barytes are to be found in the Mohawk range and the Arizona Barium Company has procured these claims and is pushing work to have a plant in operation soon after January 1.

A new leaching process has been discovered and a plant will be installed at Mohawk where the ore will be reduced in continuous closed furnaces and the cinders shipped to Los Angeles, where the manufacturing plant is being constructed. All of the barium compounds, which are now shipped from the East, will be manufactured and contracts for certain products are now being entered into with China and Japan.

Barium compounds and waste products obtained in their manufacture are used in making paint, ink and aniline industries, explosives, water purification, and for many other purposes. The most common product, no doubt, is hydrogen peroxide, which has been produced from barium peroxide only.

Plans to supply irrigation and domestic water to Carpinteria Valley have been announced here.

Briefly the plan involves building a great storage dam near the mouth of Matillija canyon, conveying the water thus impounded by gravity through an aqueduct to the distributing system in the valley. The pipe line would follow the Ventura River Canyon to Casitas Pass, thence

through Casitas Valley to a huge reservoir in Toro Canyon above Sereno.

Promoters of the project indicate that in addition to Summerland, and Carpenteria Valley, enough water can be had to supply needy Montecito.

Negotiations in San Francisco are virtually consummated looking to the consolidation of the Columbia Steel Company, the Southern California Iron & Steel Company, and the Utah Coal and Coke Company of Salt Lake City. Plans include the erection of a 500-ton blast furnace in the vicinity of Salt Lake City for the smelting of iron ores obtained in Iron County; erection of a large coke plant at Salt Lake City for by-products; development of the Utah Coal & Coke Company's properties; exploitation of the iron deposits near Iron Springs; working of limestone deposits near Salt Lake City, and the building of railroads to the new properties. In California it is planned to further enlarge the plants of the Columbia Steel Company at Pittsburg and of the Southern California Steel Company's properties.

Interested in the proposed merger are Wigginton E. Creed, of the Columbia Steel Company; A. C. Denman, Jr., President of the Southern California Iron & Steel Company; A. C. Ellis, Jr., President of the Utah Coke & Coal Company; W. W. Armstrong, President of the National Copper Bank of Salt Lake City; and L. F. Rains.

Application has been filed by Reclamation District No. 2054, with the Reclamation Board, Forum Bldg., Sacramento, for approval of plans for drainage works, involving about 400,000 cu. yds. of earth to be moved in construction of ditches, concrete work, moving and rebuilding fences, culverts, etc. Estimated cost $200,000. Project lies partly in Butte and partly in Sutter County, near the Marysville Buttes. W. M. Carruthers, J. W. Kuhn and Manuel Foster are trustees of the District. Polk & Robinson, Chico, are the Engineers.

The city of Stockton wants to change its waterfront lines, with the view to improving the navigation, creating a steamboat harbor, a waterfront thoroughfare and a civic center. For that purpose the city council has instructed City Engineer Walter B. Hogan to furnish M. P. Shaughnessy, city attorney, with the necessary maps and data to make application to the secretary of war for permission to make the necessary changes.

The plan for the development of the harbor and the creation of a civic center site proposes that the greater portion of Banner Island be dredged out, making a large harbor. The dirt from Banner Island would be used to fill in a large portion of McLeod's Lake and Miner Channel, thus creating new blocks. The plan would open Center Street through to Stockton Channel, thus creating considerable business property. It is estimated that the cost of the dredging would not exceed $50,000 and that the property which it would be necessary for the city to purchase would be $189,000.

The Diamond Match Company closed its mills at Stirling City late last month. This year's cut amounted to 32,000,000 feet, approximately 1,500,000 feet more than last year. The mills at Stirling City were opened on April 11 and ran at full capacity until recently. Figures on the seasonal output were furnished by Frank M. Thatcher, manager of logging and milling operations for the Diamond Match Company. Planers will continue during the winter months and employees of the Company who reside in Stirling City will be given first opportunity for work of this kind, Thatcher said.

Plans are being made by County Surveyor, Warren B. Burch, and bids will be called for about the first of the year for the grading of 13½ miles of Arroyo-Grande Huasna Road. After the grading is completed on this road bids will be called for the surfacing of same, type of surface to be used not definitely decided at present.

Bond election, to vote on issuing bonds in amount of $65,000 for the construction of a joint outfall sewer system along Grand Ave., Piedmont, was carried on November 15th, plans will be prepared by City Engineer E. C. Prather, Syndicate Bldg., Oakland.

Bids will probably be called for next summer for the constructing of two reservoirs in connection with the Walker River Irrigation District Alkalia Reservoir Project. Next work will probably consist of an earthen dam of 200,000 to 300,000 cu. yds. with controlling works, etc. Plans will be prepared by Chief Engineer J. A. Beemer, Walker River Irrigation District, Yerington, Nevada, and completed about March, 1922, project being located in Mono county, California. Contract for the first unit of this project, known as the Topas Lake Reservoir, was awarded to Redmond & Page, Balboa Bldg., San Francisco, who bid approximately $194,000. This portion of the work is now practically completed.

Plans have been made by the Union Pacific Railway Company for an extension to the Salt Lake Route, in Orange County, to cost about $3,000,000.

Rhode Island

William G. Havens is running a Marion Type 60 shovel for the New York, New Haven and Hartford Railroad at Providence. Mr. Havens' address is 248 Carpenter Street, Providence.

Southern States Notes

The D. B. Gore Company, Inc., of Birmingham, Ala., have obtained a lease on some coal land near Providence, Ky. and are moving their equipment from Tait's Gap, Ala. to the new place. This lease covers about 300 acres of land under which are to be found two veins of coal known as the No. 11 and 12 veins. The overburden varies in depth up to thirty feet and in between the two veins of coal is to be found a seam of lime rock. The stripping work will be done with a 225-B Bucyrus Shovel and the loading with smaller shovels. The rock will be wasted the same as the overburden unless some plans are worked out whereby the rock can be crushed and used in building of roads. Mr. Grover George is the superintendent in charge of work at Providence.

The Bogue Phalia Drainage District of Greenville, Miss., recently purchased a dragline excavator to be used in the cleaning of the drainage canals in their districts. The machine will be put to work at an early date near Trail Lake, Miss. Mr. O. C. Kulicka is Secretary and Treasurer of the district and has charge of the work.

Messrs. Clement and Braswell, of Minden, La., recently secured a large contract for furnishing the road gravel to the Parish of Bienville to be used in the construction of roads in that parish. They will start work at once in loading this material.

Douglas, Burt, Buchanan Company of Shreveport, La. will sublet some of the drainage work which was awarded them near Lake Providence, La.

Mr. W. E. Wilson is operating an 18-B Bucyrus shovel for the Herbert Fisher Brick Company at South Memphis, Tennessee.

Smith Brothers, Contractors, Alexandria, La., were successful in securing a large road contract awarded by Catahoula Parish for four new roads. The total contract price will amount to nearly $750,000.00.

Cocke & Turner, Marshall, Texas, have subcontracted for a section of road work with F. P. McElwrath of Corsicana, Texas. This work covers a section of the Jefferson Highway, through Harrison County, from the Gregg county line to the Louisiana State Line.

The W. E. Callahan Construction Company, Dallas, Texas, successful bidders on the work let by the Wichita Falls Water Improvement Districts, have started work on this large project.

Howard Kenyon Dredging Company, Houston, Texas, secured a large drainage ditch contract, let recently at Beaumont, Texas.

Womack Construction Company, McKinney, Texas,

were awarded a large road contract in Stephens County, the bids for which were opened at Breckenridge.

List and Gifford Construction Company, Dallas, Texas, are installing oil-burning equipment on their Class-14 Bucyrus dragline excavator and locomotives, which are being used on their gravel contract in Kaufman County, Texas.

A million dollar bond issue has been sold by the city of Paris, Texas, the proceeds from which will provide funds to cover the construction of a large artificial lake for the water supply of the city.

The Saragossa Mining Company's 175-B Bucyrus shovel is stripping overburden from a coal vein near Saragossa. Three eight-hour shifts are being operated. Following is the operating personnel:

	Operators	*Cranemen*
First Shift	J. M. Yarborough	J. C. Sides
Second Shift	D. C. Tedford	Walter Self
Third Shift	Vay Daniel	Vester Chandel

Their Bucyrus 18-B revolving shovel which is mounted on caterpillars is being used to load the coal. R. V. Lee is operating and J. W. Thompson firing.

W. P. Gann is running a Bucyrus 14-B shovel for the O'Brien Construction Company at Balsam, N. C. Three machines of this type were used in building roads through the mountainous country around Asheville, N. C. These machines were first used to grade the road bed, principally hillside work, and then moved down into the creek bed where they loaded out material for use in surfacing the road. Due to the caterpillar type mounting they were able to perform this character of work without difficulty.

Texas

The Atchison, Topeka & Santa Fe Railway system is considering plans looking to the construction of a through line from El Paso to Fort Worth, a distance of about 550 miles, as a consequence of the growth of the Plains section of Texas and the increasing demand for more railroad facilities. The new road will probably run from El Paso via Carlsbad, N. Mex., and Seminole, to Lamesa, whence there is an Atchison, Topeka & Santa Fe line of 50 miles to Slaton, where the Santa Fe line to Post, twenty miles, might be followed and from there a straight line would be taken to Fort Worth, perhaps via Haskell, Throckmorton and Graham. Preliminary surveys are reported made.

The Cisco & Northeastern Road plans extension into Western Palo Pinto. R. Q. Lee interested in project.

Virginia

C. A. Orrengton is running a 60-C Bucyrus shovel for the Brooks Callaway Company at Colburn.

Washington

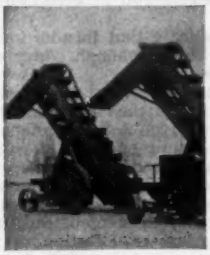
Officials of the Great Northern Road contemplate double-tracking of said road between Wenatchee and Harrington at a cost of about $700,000. P. S. Hervin, District Engineer.

Slight Favor Requested

An Eastern college graduate applied for work in a Michigan lumber camp and was assigned to one end of a cross saw, the other end being in charge of an old and experienced lumberman. At the end of an hour the veteran stopped sawing and regarded his weary partner with pitying eyes.

"Sonny," he said, "I don't mind your riding on this saw, but if it's just the same to you, I wish you'd quit scraping your feet on the ground."

—*American Legion Weekly.*



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H-50

Totally Indifferent

The rush-hour crowd was gathered waiting for cars. A middle-aged, red-faced woman dug her elbows into convenient ribs, regardless of owners.

"Say," she bellowed at a stout gentleman, after a particularly vicious jab. "Does it make any difference which of these cars I take to get to Greenwood Cemetery."

"Not to me, ma'am," he replied, slipping through an opening in the crowd. —*American Legion Weekly.*

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